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SJ Pearton, PH Holloway, RK Singh, AF Hebard, S Hershfield, F Sharifi, F Ren, S von Molnar, RC Dynes, F Hellman, IK Schuller, AC Kummel, GE McGuire, D Temple, J Lannon, C Pace, RJ Colton and SA Syed Asif.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
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13. ABSTRACT (Maximum 200 words)

A variety of new processes and materials for nanoscale magnetic devices has been developed under this 5-year program, with application to non-volatile magnetic memories and GMR/spin-valve heads. The demonstration of ultra-high density patterning techniques and magnetic dot arrays were highlights of the program.

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Nanoscale Devices and Novel Engineered Materials
DOD/AFOSR MURI
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Prepared by:

S.J. Pearton
Department of Materials Science and Engineering
University of Florida
Gainesville, FL 32611-6400
Tel: (352) 846-1086
Fax: (352) 846-1182
Email: spear@mse.ufl.edu

Participants:

University of Florida
P.H. Holloway
R.K. Singh
Department of Materials Science and Engineering

A.F. Hebard
S. Hershfield
F. Sharifi
Department of Physics

F. Ren
Department of Chemical Engineering

Florida State University
S. Von Molnar
Department of Physics

University of California San Diego
R.C. Dynes, F. Hellman and I.K. Schuller
Department of Physics

A.C. Kummel
Department of Chemistry

Microelectronics Center of North Carolina
G.E. McGuire, D. Temple, J. Lannon and C. Pace

Naval Research Laboratory
R.J. Colton and S.A. Syed Asif

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Major Accomplishments
for
MURI "Nanoscale Devices and Novel Engineered Materials"

(i) Development of new ballistic electron focusing device with potential for detection of magnetic switching of isolated nanoparticles.

(ii) New understanding of the magnetization reversal mechanism in nanoscale particle arrays.

(iii) CMR oxides with improved thermal performance.

(iv) Proved long-term mechanical and magnetic performance of dry etched MRAM stacks.

(v) Fabrication of hybrid ferromagnet/semiconductor device.

(vi) High quality IBD multilayers.

(vii) Advanced mechanical property measurements using capactive force modulation.

(viii) Installation and operation of novel Kerr probe for magneto-optical measurements on ultra-high fields (30T) at NHMFL.

(ix) Highly accurate models of transport in magnetic multilayers.

(x) Fundamental studies of the magnetic proximity effect.

(xi) Tunneling studies in magnetic semiconductors and CMR materials.

(xii) Fabrication and magneto-transport on ID magnetic structures.

(xiii) PLD of high quality $PrBaCaMnO_x$ and $LaCaMnO_x$ CMR thin films.

(xiv) CPP and CIP NiMnSb spin valves.

(xv) Development of high density etch processes for GMR and CMR materials using corrosive (Cl_2/Ar, ICl/Ar, IBr/Ar) and non-corrosive (CO/NH_3) plasma.

(xvi) Reproducible fabrication process for forming 1-D magnetic structures.
- transport properties of 75 nm nanowires.

(xvii) Developed low temperature deposition (250-300°C) of NiMnSb spin polarized magnetic layers.
- measured saturation magnetization and coercivity for NiMnSb/Cu multilayers (Cu superior to Ag).
- Trilayer spin valves (NiMnSb/Cu/NiMnSb/FeMn); CIP, CPP measurements.

(xviii) MBE capability for magnetic thin films.

(xix) Measured blocking temperature and coercivity of granular ($Co_{25}Cu_{75}$/Cu) multilayers (t_{Cu} 0-50Å, t_G 5-250Å).
- magnetic properties can be engineered by modifying local environments of Co particles (GMR increases 2x from 0-2 nm Cu spacing).

(xx) Developed processing techniques for fabrication of ultra-high density MRAMs based on GMR multilayers.
- > 64 Gbit/in^2 pattern density.

(xxi) Measured electron transport properties of rare earth hexaboride magnetic semiconductors.
- accepted model of d and f band hybridization needs modification (lattice

- distortion → indirect gap → controls electron tunneling)

(xxii) Theory of electron transport in magnetic structures.
- GMR is reduced as width of laterally confined multilayers is decreased (could be enhanced with a strongly spin-dependent scattering surface).
- effect of spin flip scattering on CIP GMR.
- full quantum microscopic calculations (effect of interface coatings, Schuller experiments on very clean multilayers).
- magnetic tunnel junctions.

(xxiii) High resolution lift-off process for 0.5μm CD features on large wafer areas.
- tested with several different materials and film deposition techniques.

(xxiv) High resolution TEM analysis capability.
- FIB sample preparation.

(xxv) STM fabrication of nm scale Fe particle arrays.
- growth into Hall Gradiometer.

(xxvi) Fabrication of self-focusing 2DES structures.

(xxvii) Dry etch mechanism and processes for patterning of NiFe, Cu, $LaMnO_3$, SmCo, NiMnSb using high density plasmas.

(xxviii) Observation of interactions between submicron magnetic structures with flux lattice of superconductor.

(xxix) Transport measurements in lines of submicron Co dots.

(xxx) Demonstration of fabrication by micro-MOCCVD of magnetic Fe nano-particles (MFM) microscopy shows ferromagnetism at room temperature). Studies of these particles, either in isolation or arrays, are intended to probe the limits to recording densities using magnetic particulate media.

(xxxi) Design, fabrication (FSU-UF collaboration), and characterization of semiconductor heterostructure focusing geometries for integration with magnetic nanostructures. These geometries offer the possibility of dynamic switching experiments on single particles.

(xxxii) Use of the highest sensitivity microcalorimeter to measure the specific heat of a thin film antiferromagnet. This will be applies to studies of materials important in exchange biased systems.

(xxxiii) Developed methods for the growth of single crystal epitaxial Co-Pt thin films of variable composition and Curie temperature. These will be incorporated in tunnel junction devices in the future.

(xxxiv) Developed the preparation of submicron magnetic microstructures in a variety of geometric configurations using electron beam lithography. This was applied to study the dynamical locking of vortices in Nb. A number of novel magnetic applications are being explored.

(xxxv) Commenced evaluation of polymer fiber-optic applications of nanocluster metal-polymer composites.

(xxxvi) Developed plasma etching processes for magnetic films and Giant Magneto-Resistance structures (NiFeNiFeCo) for next generation rad-hard high density magnetic memories and sensors. The films were obtained from Honeywell Solid State Electronics Center (A.J. Hurst, MRAM Technical Director) and these materials will be the basis for replacement MRAM devices for system insertion by Honeywell Space Systems (A. Springer, Principal Engineer).

(xxxvii) Direct fabrication of sub-micron magnetic patterns using collimated sputter deposition and electron-beam-processed mask. This technique, developed under the MURI, will be extended through a Honeywell sub-contract, to establish limits of miniaturization for GMR sense lines in MRAM devices.

(xxxviii) E-beam patterning
- high density using lift-off: minimum feature size 200Å, spacing 400Å
- low density using novel masks, control of e-beam spread: minimum feature size < 100Å

(xxxix) Examined effect of lateral confinement on GMR. Typically the GMR is decreased with confinement, unless the sides are very smooth (specular scattering). Controlling surface disorder is very important.

(xl) Produced three modeling tools: Boltzmann equation in multilayer, Boltzmann equation in laterally confined multilayers and impurity averaged Green functions/Multilayer Boltzmann equations. These will work on Unix, PC and Mac platforms. (Need Matlab and also Fortran for the accelerated version).

(xli) Evaluated different approaches to GMR in multilayers. With the impurity averaged green functions/Multilayer Boltzmann equation we believe we can calculate GMR with realistic electronic structure up to 100 layer unit cells

(xlii) Fabrication of a semiconductor FET with ferromagnetic contacts.

(xliii) Study of the effects of UV illumination on the etch mechanism of magnetic materials.

(xliv) Long-term stability of dry etched MRAM stacks.

(xlv) Patterning of new storage capacitor materials for DRAM.

(xlvi) Novel mechanism for ferromagnetism in CaB_6.

(xlvii) Magnetization reversal in magnetic nano-particle arrays.

(xlviii) Screening length determination in tunnel junctions.

(xlix) Hysteresis and relaxation phenomena in GMR multilayers.

(l) Particle size dependence of superparamagnetic-ferromagnetic transition in Ni.

(li) Proximity effects in magnetic/nonmagnetic systems.

(lii) Tunnelling magnetoresistance in GMR/CMR structures.

(liii) Chemisorption of halogens on metals as a precursor to etching.

(liv) Mechanical properties of nanowires.

(lv) Size effects in magnetic and superconducting materials.

(lvi) Optimized ion beam deposition of GMR multilayers.

(lvii) Theory of maximum-possible GMR effect.

Technology Highlights

1. Discovered a dry etching process for NiFe and related alloys based on a balance between chemical surface reaction with Cl, and ion-assisted desorption of the reaction products, followed by *in-situ* removal of chlorine resides to prevent corrosion. This is being transitioned to Honeywell for use in fabricating high density, rad-hard, non-volatile Magnetic Random Access Memories (MRAMs).

2. Growth of the first high quality, potentially 100% spin-polarized NiMnSb thin films at low (250°C) temperatures. These are attractive candidates for advanced magnetic storage devices with improved Giant Magneto-Resistance response.

3. Development of techniques for reducing the ultimate limits of e-beam lithography, and resultant achievement of individual features with dimension <300Å, and dense arrays (>10 Gbits·in^{-2}) of 500 Å features for next generation information storage devices.

4. Growth of improved SrS:Ce, F thin films which emit in the blue, using addition of GaS during rf-magnetron deposition. These have application for full color electroluminescent displays. A plasma etching process for patterning of these films has also been discovered (work done in collaboration with Planar Systems, the only domestic supplier of EL displays).

5. Use of novel, non-corrosive etching chemistries (e.g. Co/NH_3) for magnetic materials (NiFeCo, FeAlN, CoCu), with application to read/write heads (in conjunction with Plasma-Therm, a manufacturer of etching systems, and Seagate, a manufacturer of computer hard drives).

6. Ultra-high density patterning process (> 64 Mbit·in^{-2}) based on e-beam lithography for future generations of rad-hard, infinitely rewritable Magnetic Random Access Memories (MRAMs) – work done in collaboration with Honeywell Solid State Technology Center, MN.

7. Growth of high quality CoFeB and low temperature NiMnSb thin films (< 250°C), both of which are attractive candidates for next generation information storage devices – work done in collaboration with IBM Almaden Research Center, San Jose, CA.

8. Development of the non-corrosive Co/NH_3 plasma chemistry for shallow feature etching (e.g. MRAMs) – work done in conjunction with Plasma-Therm, St. Petersburg, FL and Seagate, MN.

9. Development of new Kerr probe for ultra-high B field magneto-optical measurements – work done in conjunction with National High Magnetic Field Laboratory, Tallahassee, FL, where the probe is available as a user facility.

10. Maskless approaches to ultra-high density patterning for future generations of rad-hard, infinitely rewritable Magnetic Random Access Memories (MRAMs) – work initiated in collaboration with Honeywell Solid State Technology Center, MN.

11. Discovered a dry etching process for NiFe and related alloys based on a balance between chemical surface reaction with Cl, and ion-assisted desorption of the reaction products, followed by *in-situ* removal of Chlorine resides to prevent corrosion. This is being transitioned to Honeywell for use in fabricating high density, rad-hard, non-volatile magnetic Random Access Memories (MRAMs).

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14. Growth of improved nanoscale SrS:Ce, F thin films which emit in the blue, using addition of GaS during rf-magnetron deposition. These have application for full color electroluminescent displays. A plasma etching process for patterning of these films has also been discovered (work done in collaboration with Planar Systems, the only domestic supplier of EL displays).

15. Customer: UNAXIS USA, Inc., 10050 16th Street North, St. Petersburg, FL 33716.

Contact: Jewon Lee, 727/577-4999

Result: A process for *in-situ* removal of chlorine or other corrosive gas residues from the surface of plasma-etched magnetic structures. The process involves a short post-etch exposure to a hydrogen plasma, which removes the etch residues. The completed structures can then be removed from the etch chamber and exposed to air. We have found that this procedure eliminated corrosion of the magnetic multilayers comprising the magnetic structure.

Application: To continue the advances in magnetic data storage and magnetic random access memories, it is necessary to use the high yield etching processes from the Si chip industry to make smaller, higher density magnetic elements. A problem to date in etching the metal layers that comprise magnetic structures has been post-etch corrosion from residues left on the surface. Our process solves this problem.

16. Customer: Army Research Lab (European Research Office), 223 Old Marylebone Road, London NW1 5TH, United Kingdom

Contact: John Zavada 011-44-171-514-4907

Result: A method for making magnetic semiconductors, such as GaMnN, by high dose implantation of Mn ions and subsequent annealing. The resultant material retains the electrical and optical properties of the host semiconductor, but also has magnetic properties such as ferromagnetism. This enhances the functionality of the material, by having electrical, optical and magnetic properties on the same chip.

Application: Spin-electronics, in which the spin of the electron is utilized in addition to its charge. This should enable a new class of electronics for low power, high-density memories.

Interactions and Industrial Contacts

1. IBM Almaden Research Center, San Jose, CA – new nanoscale materials and processes for computer hard devices
2. Honeywell Solid State Electronics Center, Plymouth, MN – new processes for radiation-hard memory.
3. Honeywell Space Systems, Clearwater, FL – next generation MRAM for use in submarine-based missile systems.
4. Plasma-Therm, St. Petersburg, FL – new etch processes for magnetic materials.
5. Seagate, Minneapolis, MN – new etch processes for magnetic material.
6. IBM T.J. Watson Research Center, Yorktown heights, NY - new etch processes for magnetic materials.
7. Motorola, Tempe, AZ – advanced processing for MRAM.
8. Bell Laboratories, Lucent Technologies – deposition/etching of advanced dielectrics for memory devices.
9. Piezo Technology, Inc., Orlando, FL – characterization/etching of new oxides for ultra-precise timing applications (oscillators).
10. Corning, Corning, NY – advanced dielectrics for magnetic sensors.
11. Naval Research Laboratory, Washington, DC – methods for measuring mechanical properties at the nanoscale, and fabrication of spin-FETs.
12. Sandia National labs, Albuquerque, NM – high rate etching processes for magnetic multilayers.
13. Allied Signal, Columbia, MD – e-beam lithography for ultra-dense patterning.
14. American Crystal Technology, Fremont, CA – growth of dilute magnetic semiconductors.
15. US Army Research Lab, Adelphi, MD – magnetic sensors.

Refereed Publications

"Comparison of Dry Etching Techniques for III-V Semiconductors in $CH_4/H_2/Ar$ Plasmas," S.J. Pearton, J.W. Lee, E.S. Lambers, C.R. Abernathy, F. Ren, W.S. Hobson and R.J. Shul, J. Electrochem. Soc., 143, 752 (1006).

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"Cl_2/Ar Plasma Etching of Binary, Ternary and Quaternary In-Based Compound Semiconductors," J. W. Lee, J. Hong, C. R. Abernathy, E. S. Lambers and S. J. Pearton, W. S. Hobson and F. Ren, J. Vac. Sci. Technol. B 15, 657 (1997).

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"Plasma Etching of III-V Semiconductors in BCl_3 Chemistries: Part I : GaAs and Related Compounds," J. W. Lee, J. Hong, E. S. Lambers, C. R. Abernathy and S. J. Pearton, W. S. Hobson and F. Ren, Submitted to Plasma Chem. & Plasma Proc. 27, 650 (1996).

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"Etching Processes for Fabrication of GaN/InGaN/AlN Microdisk Laser Structures," J. W. Lee, C. B. Vartuli, C. R. Abernathy, J. D. MacKenzie, J. R. Mileham and S. J. Pearton, R. J. Shul, J. C. Zolper and M. Hagerott-Crawford, R. G. Wilson and R. N. Schwartz, J. Vac. Sci. Technol. B 15, 6256 (1996).

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"Pulsed Laser Deposition of Thin Film Phosphors for Field Emission Flat Panel Displays", S. Jones, D. Kumar R.K. Singh and P.H. Holloway, 43rd Annual National Symp. of the AVS, Philadelphia, PA, October 14-18, 1996.

"Pulsed Laser Deposition of Y2O3: Eu CL Phosphors", S.L. Jones, D. Kumar, R.K. Singh and P.H. Holloway, Second Intl. Conf. on Display Phosphors, San Diego, CA, November 18-20, 1996.

"Pulsed Laser Deposition of Thin Film Phosphors for Field Emission Flat Panel Displays", S.L. Jones, D. Kumar, R.K. Singh and P.H. Holloway, 190th Meeting of the Electrochemical Society, San Antonio, TX, October 6-11, 1996.

"Deposition and Characterization of Eu:Y2O3 Red Phosphor Thin Films", D. Kumar, R.K. Singh, S. Jones and P.H. Holloway, 1997 Spring Meeting of the MRS, San Francisco, CA, March 31-April 4, 1997.

"Semiempirical Calculations of 4f-5d Spectroscopy of Ce3+ in Metal Sulfide Host Crystals" Ted O'Brien, Philip Rack, Paul Holloway and Mike Zerner, 1997 Sanibel Conference, Palm City, FL, May, 1997.

"Ferromagnetic Properties of Spark-Processed Photoluminescing Silicon" J. Hack, M.H. Ludwig, and R.E. Hummel, Materials Research Society 1996 Fall Meeting, December 2-6 1996, Boston.

"Multicolor-Effects of Luminescing, Nanostructured Silicon After Spark-Processing in Pure and Composite Gases", M.H. Ludwig, A. Augustin, and R.E. Hummel, Materials Research Society 1996 Fall Meeting, December 2-6 1996, Boston.

"Calculation of Giant Magnetoresistance in Laterally Confined Multilayers", Kingshuk Majumdar, Jian Chen, and Selman Hershfield, March 1997 Meeting of the American Physical Society.

"Flux Pinning in Nb by an Array of Magnetic Dots", Maria Velez, Jose I. Martin, Josep Nogues and Ivan K. Schuller, March Meeting, The American Physical Society, Bull. Am. Phys. Soc. 42 63 (1997).

"Fabrication of Submicrometer Magnetic Structures by e-Beam Lithography", Yvan Jaccard, Jose I. Martin, Josep Nogues, J.-M. George and Ivan K. Schuller, March Meeting, The American Physical Society, Bull. Am. Phys. Soc. 42, 506 (1997).

"Pinning Effects by Arrays of Magnetic Dots on Niobium Film", J.I. Martin, M. Velez, J. Nogues, A. Hoffmann, Y. Jaccard and Ivan K. Schuller, International Conference on Magnetism (ICM) 1997, Cairns, Australia, July 27-August 1, 1997.

"Domain Structure and Magnetoresistance in Chains of Submicron Co Dots", M.J. Van Bael, K. Temst, C. Van Haesendonck, V.V. Moshchalkov, Y. Bruynseraede, J.I. Martin, J. Nogues and Ivan K. Schuller, 16th General Conference, EPS, Condensed Matter Division, Leuven, Belgium, August 25-28, 1997.

"MFM Study of the Magnetic Domain Structure in Chains of Submicrometer Sized Co Dots", M.J. Van Bail, K. Temst, C. Van Haesendonck, V.V. Moshchalkov, Y. Bruynseraede, J.I. Martin, J. Nogues and Ivan K. Schuller, Annual Meeting, Belgian Physical Society, 1997.

"Pinning of the Vortex Lattice in Nb Film by a Regular Magnetic Dot Array", Y. Jaccard, A. Hoffmann, M.-C. Cyrille, J. Nogues, I.K. Schuller, J.I. Martin, M. Velez, J.L. Vicent, 16th General Conference, EPS, Condensed Matter Division, Leuven, Belgium, August 25-28, 1997.

"Mesoscopic and Strongly Correlated Electron System", Aviad Frydman, Landau Institute for theoretical Physics, Moscow (Kosygina), Russia, June 14-26, 1997.

"Polarized Neutron Reflectometry Study of Ferromagnetic Proximity Effect in Magnetic Bilayers", A.L. Shapiro, B.M. Maranville, M. Fitzsimmons and F. Hellman, Poster presentation at the Los Alamos Neutron Science Center User Group Meeting.

"Relative Merits of Cl_2 and CO/NH_3 Plasma Chemistries for Dry Etching of MRAM Device Elements," K.B. Jung, h. Cho, Y.B. Hahn, E.S. Lambers, Y.D. Park, S.J. Pearton, S. Nozuchi, D. Johnson, A.T. Hurst and J.R. Childress, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Fabrication of Exchange-Biased Spin-Valves with CoFeB Amorphous Layers," T. Feng and J.R. Childress, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Calculations of CPP-GMR with a Current-Conserving Method," J. Chen, T. Choy and S. Hershfield, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Correlation Between Spin-Polarization and Magnetic Movement per Atom in Ferromagnetic Fe-Ni Alloys," T. Choy, J. Chen and S.S. Hershfield, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Effect of Ion Irradiation Induced Disorder on the Magnetoresistance of Lanthanum Manganites," P. Xiong, S.M. Watts, M. Li, S. Wirth, K. Kahmen, S. von Molnár, A.S. Katz and R.C. Dynes, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Magnetism of Nanometer-Scale Iron Particles Arrays," S. Wirth, S. von Molnár and D.D. Awschalom, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998 (invited).

"$\frac{1}{f}$ noise in Magnetic Films," B. Racquet, J.M.D. Coey, D.M. Lind and S. von Molnár, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Simulation of the Interband s-d and Intraband s-s Electron-Phonon Contributions to the Electrical sensitivity of Fe/Cr Multilayers," B. Alneida, V.A. Amaral, J.B. Sousa, J. Colino, I.K. Schuller and Y. Bouynserade, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Perpendicular magnetoresistance of Microstructured Ge-Cr Multilayers," N.-C. Cyrille, S. Kim and I.K. Schuller, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Spin Waves in Exchange Bias Systems Studied by Light Scattering," G. Guentherodt, P. Miltinyi, J. Noguis, I.K. Schuller, C. Malbreau, M. Bauer, F. Fassbenden, B. Hillebrands, R. Jungblut, J. Koblhepp and A. Reinders, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Positive Exchange Bias in MnF_2/Fe Bilayers," C. Leighton, I.K. Schuller and J. Nogues, 43rd Ann. Conf. Magn. & Mag. Materials, Miami 1998.

"Dry Etch Processes for NiMnSb, $LaCaMnO_x$ and Related Materials," J. Hong, J.J. Wang, E.S. Lambers, J.A. Caballero, J.R. Childress, S.J. Pearton, K. Dahmen, S. von Molnár, F.J. Cadieu and F. Sharifi, 1997 Fall MRS Meeting, Boston, 1997.

"Patterning of Thin Film NiMnSb Using ICP Etching," J. Hong, J. Caballero, E.S. Lambers, J.R. Childress and S.J. Pearton, 40th Electron. Ion and Photon Beam Conf., Chicago, 1998.

"ICP Etching of NiFe and NiFeCo in GMR Structures," K.B. Jung, J.R. Childress, S.J. Pearton, M. Jenson and A. Hurst, 1998 Spring MRS, San Francisco, April 1998.

"Plasma Chemistries for Etching of $LaCaMnO_3$/SmCo GMR Structures," J.J. Wang, K.B. Jung, J.R. Childress, S.J. Pearton, F. Sharifi, K. Dahmen, E.S. Gillman, F. Cadieu, R. Rami and L. Chen, 1998 Spring MRS, San Francisco, 1998.

"Plasma Etching for Novel Electronic and magnetic Thin Films," S.J. Pearton, J. Lee, K.B. Jung, H. Cho, E.S. Lambers and J.R. Childress, 1998 Florida AVS Symp., Orlando, 1998 (invited).

"A New Probe to Perform magneto-Optical Kerr Measurements on Thin Films and Multilayers," W. Geerts, J. Childress, S.J. Pearton, T. Schmeidel and V. Williams, 1998 APS March Meeting, Los Angeles, 1998.

"High Density Plasma Etching of NiFe, NiFeCo and NiMnSb-based Multilayers for magnetic Storage Elements," K.B. Jung, J. Hong, H. Caballero, J.R. Childress, S.J. Pearton, M. Jenson an A. Hurst, 1998 Spring E-MRS Meeting, Strasbourg, France, 1998.

"ECR-CVD SiN_x for T-gate Passivation," F. Ren, J. LaRoche, T. Anderson, S.J. Pearton, J.W. Lee, D. Johnson, R.J. Shul and C.S. Wu, 193rd ECS Meeting, San Diego, 1998.

"Plasma Etching of NiFe/Cu and NiMnSb/Al_2O_3 Multilayers for Sub-Micron Pattern Deposition," K.B. Jung, J. Hong, J. Caballero, J.R. Childress, S.J. Pearton, F. Sharifi, M. Jenson and A. Hurst, 3rd Intl. Symp. Metallic Multilayers '98, Vancouver, 1998.

"*In-situ* Monitoring of Etch By-Products During RIBE Using Cl_2/Ar," J. Lee, S.J. Pearton, C. Abernathy, G. Vawter, R. Shul, M. Bridges and C. Willison, 1997 Fall MRS Meeting, Boston, 1997.

"ECR Plasma Etching of Oxides and SrS and ZnS EZ Materials for Flat Panel Displays," J. Lee, M. Davidson, B. Pathangey, P. Holloway, T. Anderson, S. Pearton and F. Ren, 44th Nat. Symp. AVS, San Jose, 1997.

"Plasma Etching of NiFeCo, NiMnSb and CoFeB-Based Multilayers," K. Jung, H. Cho, T. Feng, J. Caballero, D. Park, J. Childress, F. Ren and S.J. Pearton, ECS Meeting, Boston, 1998.

"Magnetic Order of Co0.1Pt0.9 in Proximity of CoPt3," A. L. Shapiro, F. Hellman, and M. R. Fitzsimmons, oral presentation at MRS Conference Spring 1998.

"Flux Pinning in a Superconductor by an Array of Submicron Magnetic Dots", I.K. Schuller, Bull. Am. Phys. Soc. 43, 635 (1998). (Invited Talk)

"Periodic Pinning in Nb by Magnetic Dots", Arrays Axel Hoffmann, M.C. Jaccard, Ivan K Schuller, Jose I. Martin, Maria Velez and Jose Vicent, Bull. Am. Phys. Soc. 43, 325 (1998).

"The Search for Depth Dependence in Proximity Effect-Induced Ferromagnetic Moments", B. B. Maranville, A. L. Shapiro, F. Hellman, and M. R. Fitzsimmons, Poster presentation at the Los Alamos Neutron Science Center User Group Meeting August 1998.

"Conductance Fluctuations in Mesoscopic Granular Superconductors", Aviad Frydman, oral presentation at the APS March meeting, Los Angeles CA (1998).

"Disorder Induced Andreev Reflections in Granular Metals", Aviad Frydman, oral presentation at the APS March meeting, Los Angeles CA (1998).

"Magnetoresistance of Granular Ferromagnets - Observation of a Magnetic Proximity Effect?," Aviad Frydman, poster presentation at the Topical workshop on Magnetic Heterostructures, Madison, WI (1998).

"Nanostructure effects on the optical properties of luminescent materials", P.H. Holloway and S.L. Jones, 3rd International Meeting on Physical Fields, Tsukuba, Japan, February 18-20, 1998. (Invited)

"Advances in Field Emission Display Phosphors", Paul Holloway, S. Jones, T. Trottier, B. Abrams, J. Thomes, and H. Swart International Vacuum Microelectronics Conference, Asheville, NC, July 19-24, 1998. (Invited)

"Enhanced Efficiency and Lifetime of Thin Film and Screened FED Phosphors", Paul H. Holloway, S.L. Jones, T.A. Trottier, B. Abrams, J.-S. Bang, X.-M. Zhang and C. Kondoleon, International Research in Displays Conference, Seoul, Korea, September 28-October 1, 1998. (Invited)

"Crystal Field and Semiempirical Molecular Orbital Calculations of Ce^{+3} Doped Alkaline Earth Sulfide Phosphors", P.D. Rack, T.A. O'Brien, M.C. Zerner and P.H. Holloway, Third Intl. Conf. on Display Phosphors, Huntington Beach, CA, November 3-5, 1997

"Advances in Thin Film Cathodoluminescent Phosphors", P.H. Holloway, S. Jones, T. Trottier, B. Abrams, W.J. Thomes, R. Singh, and D. Kumar, 1998 Spring Meeting of the MRS, San Francisco, CA, April 13-17, 1998

"Improved Luminescent Properties of Pulsed Laser Deposited Eu:Y_2O_3 Thin Film Phosphors on a Sapphire Substrates", K.G. Cho, D. Kumar, D.G. Lee, S.L. Jones, P.H. Holloway and R.K. Singh, 1998 Spring Meeting of the MRS, San Francisco, CA, April 13-17, 1998

"Luminescent Properties of Pulsed Laser Deposited Eu:Y_2O_3 Thin Film Phosphors on Diamond Coated Silicon Substrates", K.G. Cho, D. Kumar, D.G. Lee, S.L. Jones, P.H. Holloway and R.K. Singh, 1998 Spring Meeting of the MRS, San Francisco, CA, April 13-17, 1998

"Eu Doped Y_2O_3 Thin Films for Increased Luminescence", S.L. Jones, J. Thomes, K. Gong, D. Kumar, R.K. Singh, and P.H. Holloway, 26th Annual Symposium of the Florida Chapter of the AVS, Orlando, FL, Feb. 23-24, 1998

"Tight-binding Calculation of the GMR for Co/Cu Superlattices," Jian Chen and Selman Hershfield, March 1998 Meeting of the American Physical Society.

"Magnetoresistance of the Double-Tunnel-Junction Coulomb Blockade with Magnetic Metals," Kinghsuk Majumdar and Selman Hershfield, March 1998 Meeting of the American Physical Society.

"Separation of Spin and Charge Currents in a Superconductor," Selman Hershfield, Invited Talk March 1998 Meeting of the American Physical Society.

"Calculations of the CPP-GMR with a Current Conserving Method," Jian Chen, Tat-Sang Choy, and Selman Hershfield, to be presented at the 43rd Annual Conference on Magnetism and Magnetic Materials, Miami, Florida, November 9-12, 1998.

"Correlation Between Spin Polarization and Magnetic Moment Per Atom in Ferromagnetic Fe-Ni alloys," Tat-Sang Choy, Jian Chen, and Selman Hershfield, to be presented at the 43rd Annual Conference on Magnetism and Magnetic Materials, Miami, Florida, November 9-12, 1998.

F. Sharifi, invited presentation at the 1998 APS March Meeting, Los Angeles, CA.

"Plasma Etching of NiFeCo, NiMnSb and CoFeB-based Multilayers," K.B. Jung, H. Cho, T. Feng, J. Caballero, D. Park. J. Childress, F. Ren and S.J. Pearton, 5th Intl. Symp. Magnetic Materials, Processes and Devices, ECS Meeting, Boston, Nov. 1998.

"Wet and Dry Etch Selectivity for the GaAs/AlGaAs and GaAs/InGaP Systems," D. Hays, C. Abernathy, S.J. Pearton, F. Ren and W.S. Hobson, State-of-Art program on Comp. Semi., ECS Meeting, Boston, Nov. 1998.

"Long-term Corrosion Stability of Patterned NiFe/Cu/NiFeCo Multilayers after Cl_2-based Plasma Etching," K.B. Jung, F. Sharifi, J. Marburger and S.J. Pearton, APS Centennial Meeting, Atlanta, March 1999.

"Transport Studies of I-D Magnetic Wires," J. Marburger, H. Hudspeth, F. Sharifi and S.J. Pearton, APS Centennial Meeting, Atlanta, March 1999.

"Development of Low Temperature SiN_x and SiO_2 by ICP-CVD," J. Lee, K.D. Mackenzie, D. Johnson, S.J. Pearton, F. Ren and J.N. Sasserath, MRS Spring Meeting, San Francisco, April 1999.

"Selective Dry Etching of the GaN/InN/AlN, GaAs/AlGaAs and GaAs/InGaP," D. Hays, C. Abernathy, W. Hobson, S. Pearton, J. Han, R.J. Shul, H. Cho, K. Kung, F. Ren and Y. Hahn, MRS Spring Meeting, San Francisco, April 1999.

"Dry Etching to Form Submicron Features in CMR Oxides : $PrCaBaMnO_x$ and $LaSrMnO_x$," K.P. Lee, K. Jung, H. Cho, D. Kumar, S. Pietambaram, R.K. Singh, P. Hogan, K. Dahmen and S.J. Pearton, MRS Spring Meeting, San Francisco, April 1999.

"Effect of Noble Gas Addition (He, Ar, Ke) on Cl_2-based Etching of NiFe and NiFeCo," K.B. Jung, H. Cho, Y.D. Park, S.J. Pearton, J. Childress and M. Jenson, 45th Int. Symp. AVS, Baltimore, Nov. 1998.

"Comparison of Cl_2 and F_2-based Chemistries for the ICP Etching of NiMnSb," J. Hong, J. Caballero, J. Childress and S.J. Pearton, 45th Int. Symp. AVS, Baltimore, Nov. 1998.

"Development of Chemically Assisted Dry Etching Methods for Magnetic Device Structures," K.B. Jung, H. Cho, J. Marburger, F. Sharifi, R.K. Singh, D. Kumar, K.H. Dahmen and S.J. Pearton, 43r^{d} Electron, Ion and Photon Beam for Nanofabrication Conf., Marco Island, FL, June 1999.

"*In-situ* Plasma Cleaning Processes for Prevention of Corrosion on Dry Etched Magnetic Multilayers," K. Jung, S.J. Pearton, J. Marburger and F. Sharifi, MRS Spring Meeting, San Francisco, April 1999.

"Cl_2-based Dry Etching of Doped Manganate Perovskites: $PrBaCaMnO_x$ and $LaSrMnO_x$," K.P. Lee, K. Jung, H. Cho, D. Kumar, S. Pietambaram, R.K. Singh, K.H. Dahmen and S.J. Pearton, Florida Chapter of AVS, Orlando, March 1999.

"Electron Tunnelling Measurements on $LaCaMnO_3$," H.D. Hudspeth, F. Sharifi, S. Pietambaram, D. Kumar, R.K. Singh, S.J. Pearton, E. Gillman, K.H. Dahmen and S. Von Molnar, 1998 Fall MRS Meeting, Boston, Dec. 1998.

"Comparison of Characteristics of Dry Etching of $LaCaMnO_3$, NiMnSb and NiFe Thin Films," K. Jung, H. Cho, J. Wang, J. Caballero, S.J. Pearton, J. Childress and K.H. Dahmen, 1998 Fall MRS Meeting, Boston, Dec. 1998.

"Transport Studies of ID Magnetic Wires," J. Marburger, H.D. Hudspeth, F. Sharifi, M. Overberg, C.R. Abernathy and S.J. Pearton, 1998 Fall MRS Meeting, Boston, Dec. 1998.

"Development of Low Temperature SiN_x and SIO_2 films by ICP-CVD," J. Lee, D. Johnson, S.J. Pearton and F. Ren, MRS Spring Meeting, San Francisco, April 1999.

"Dry Etching Characteristics of $LaCaMnO_3$, NiMnSb and NiFe," K.B. Jung, H. Cho, T. Feng, J.R. Childress and S.J. Pearton, 27th Appl. Vac. Sci. Tech. Symp., Orlando, March 1999.

"Selective Dry Etching Using ICP : GaAs/AlGaAs and GaAs/InGaP," D. Hays, H. Cho, K. Jung, C. Abernathy, S.J. Pearton and F. Ren, 27th Appl. Vac. Sci. Tech. Symp., Orlando, March 1999.

"Novel *in-situ*, Ion Bombardment Process for a Thermally Stable (>800°C) Plasma Deposited Dielectric," F. Ren, S.J. Pearton, J. LaRoche and J.W. Lee, MRS Spring Meeting, San Francisco, April 1999.

"Simulation of the Interband s-d and Intraband s-s Electron-phonon Contributions to the Electrical Resistivity of Fe/Cr Multilayers," D. Almeida, V. Amaral, J.B. Sousa, I.K. Schuller and Y. Broynseraede, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Perpendicular Magnetoresistance of Microstructured Fe-Cr Multilayers," M. Cyrille, S. Kim and I.K. Schuller, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Spin Waves in Exchange Bias Systems Studied by Light Scattering" G. Guentherodst, J. Nogues, I.K. Schuller, C. Mathiue and A. Reinders, 43rd Ann Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Positive Exchange Bias in MnF_2/Fe Bilayers," C. Leighton, I.K. Schuller and J. Nogues, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Effect of Ion Irradiation Induced Disorder on the MR of Lanthanum Manganites," P. Xiong, S. Watts, S. Wirth, K.H. Dahmen, S. Von Molnar, A. Katz and R.C. Dynes, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Magnetism of Nonometer-Scale Iron Particle Arrays," S. Wirth, S. Von Molnar and D. Amschulom, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"$\frac{1}{f}$ Noise in magnetic Films," B. Raquest, J. Coey, D. Lind and S. Von Molnar, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Calculations of CPP-GMR with a Current-Conserving Method," J. Chen, T.S. Choy and S. Hershfield, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Correlation Between Spin Polarization and Magnetic Movement per Atom in Ferromagnetic Fe-Ni Alloys," T.S. Choy, J. Chen and S. Hershfield, 43rd Ann. Conf. Magn. Magn. Mat., Miami, Nov. 1998.

"Electron Tunnelling Measurements of the CMR Perovskites," H.D. Hudspeth, F. Sharifi, P. Xiong and S. Von Molnar, APS March Meeting, Atlanta, March 1999.

"Magnetoresistance in Rare-earth Chalcogenides-Relationship to Other Rare-earth Compounds," S. Von Molnar, APS March Meeting, Atlanta, March 1999.

"$\frac{1}{f}$ Noise in Colossal MR Materials," A. Anone, B. Racquet, P. Xiong, Z. Fisk and S. Von Molnar, APS March Meeting, Atlanta, March 1999.

"Ballistic Electron Focussing By Elliptic Reflecting Carriers," J. Heremans, S. Von Molnar, D. Awschalom and A. Gossard, APS March meeting, Atlanta, March 1999.

"Novel Magnetotransport in Half-Metallic CrO_2," S. Watts, S. Wirth, A. Anone, S. Von Molnar, A. Barry and J. Coey, APS March Meeting, Atlanta, March 1999.

"Gas Adsorption Studies on Superlattices of Co/Ni," A. Cabresa, S. Kim and I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"Rough Interfaces Mimic Tunnelling," D. Rabson, A. Romero and I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"A Complete Microstructural Analysis of Fe/Cr Superlattices," M. Gomez, S. Kim, M. Cyrille, I.K. Schuller and K. Krishnan, APS March Meeting, Atlanta, March 1999.

"Effect of Cooling Field and Interface Roughness on Exchange Bias in MnF_2/Fe," C. Leighton, I.K. Schuller and J. Nogues, APS March Meeting, Atlanta, March 1999.

"The Dependence of Anisotropic Magnetoresistance on Structural Parameters in Fe/Cr Superlattices," M. Cyrille, S. Kim, M. Gomez, C. Leighton and I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"Structural, Magnetic and Transport Properties of Fe_3O_4/MgO/Fe Trilayers," S. Kim, C. Leighton and I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"Pinning Effects of Anisotropic Arrays of Ni Dots in Nb Films," J. Vincent, J. Martin, G. Hoffman and I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"Photoexcitation of Superconductivity," I.K. Schuller, APS March Meeting, Atlanta, March 1999.

"Magnetoresistance in Films with Tortuous Current Paths," S. Hershfield, S. Arrenson and A. Hebard, APS March Meeting Atlanta, March 1999.

"Temperature Dependence of the GMR without Spin-flip Scattering," J. Chen, T.S. Choy and S. Hershfield, APS March Meeting, Atlanta, March 1999.

"Kondo Physics in a Normal Superconductor Point Contact," A. Clerk, V. Ambegaokar and S. Hershfield, APS March Meeting, Atlanta, March 1999.

"Correlation Between Spin Polarization and Magnetic Current in Ferromagnetic Alloys," T.S. Choy, J. Chen and S. Hershfield, APS March Meeting, Atlanta, March 1999.

"Nanotubes for Electrostatic Force Microscopy," S. Arrenson, Q. Hudspeth, O. Ganesh and A.F. Hebard, APS March Meeting, Atlanta, March 1999.

"The Role of Interface Traps in the Scaling Collapse of Complex Impedance Data of Al/Al_2O_3 Tunnel Junctions," K. McCarthy, S. Arrenson and A.F. Hebard, APS March Meeting, Atlanta, March 1999.

"Local MR Response of Nanoscale Co Dots on Si using AFM," J. Wittsock, K. Rao, J. Nogues and I.K. Schuller, MRS Spring Meeting, San Francisco, CA, April 1999.

"Flux Pinning in a Superconductor by an Array of Submicron Magnetic Dots," Ivan K. Schuller, XIV Simposio Latinamericano, Oaxaca, Mexico, January 11-18, 1998.

"Nanoindentation And Capacitive Force Modulation," S.A. Syed Asif, K.J. Wahl, and R.J. Colton, American Vacuum Society 45th International Meeting, Baltimore (1998).

"Nanoscale Surface Mechanical Property Measurements Using Force Modulation Technique," S.A. Syed Asif, K.J. Wahl, and R.J. Colton, 217th American Chemical Society National Meeting, Anaheim, March 21-25 (1999).

"Measuring and imaging contact stiffness quantitatively at nanoscale using force modulation," S.A. Syed Asif, K.J. Wahl, and R.J. Colton, 46th American Vacuum Society International Meeting, to be held in October 25-29, Seattle (1999).

"Magnetic Order Of $Co_{0.1}Pt_{0.9}$ In Proximity Of $CoPt_3$," A. L. Shapiro, oral presentation at MRS Conference, Spring 1998.

"The Search For Depth Dependence In Proximity Effect-Induced Ferromagnetic Moments," B. B. Maranville, A. L. Shapiro, F. Hellman, and M. R. Fitzsimmons, Poster presentation at the Los Alamos Neutron Science Center User Group Meeting August 1998.

"Magnetic Properties of Nanometer-scale Iron Particles," S. Wirth, J. J. Heremans, S. von Molnár, M. Field and D. D. Awschalom, APS March Meeting 1998, Los Angeles, USA.

"Electrical Noise from Phase Separation in $PrCaMnO_3$ Single Crystal," A. Prange, S. von Molnar, L. Pinsaid-Godast and A. Revcolevschi, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Magnetic Interactions in nm-Scale Particle Arrays Grown onto Permalloy Films," S. Wirth and S. con Molnar, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Investigating Artificial Barriers in Spin-Dependent Tunnel Junctions with Superconducting Electrodes," C. Platt, A. Berkowitz, A.S. Katz and R.C. Dynes, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Anisotropic Magnetotransport and Microstructural Analysis of Fe/Cr Superlattices," M. Cyrille, M.E. Gomez, C. Leighton and I.K. Schuller, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Effect of the Antiferromagnetic Spin-Hop in Exchange Bias," J. Nogues, C. Morellon, M. Ibarra, C. Leighton and I.K. Schuller, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Exponential Thickness Dependence and Nonlinear I-V Curves: Do they Establish Tunneling," B. Fousson, R. Escadero, C. Leighton, A. Romero, S. Kim, I.K. Schuller, M. Grossman and D. Rabson, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"45° Exchange Coupling Across the Fe-Fe_2 Interface," M. Fitzsimmons, D. Yashar, C. Leighton, I.K. Schuller, J. Nogas and J. Dura, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Coercivity in the Positive Exchange Bias Regime," C. Leighton, I.K. Schuller and J. Nogues, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, November 1999.

"Spin Polarized Photoemission Study of Magnetic Films – Evidence for Half-Metallic Ferromagnetic Behavior," S. Morton, G. Waddill, J. Tobin, S. Kim and I.K. Schuller, Spring MRS, San Francisco, April 2000.

"Transient and Steady State Electrochemical Effects and its Correlation to CMP Removal Rates During Metal Removal," R.K. Singh, U. Mahajan, S.-M. Lee, Z. Chen and D. Lamholdt, Spring MRS, San Francisco, April 2000.

"Fundamental Studies on the Mechanisms of Oxide CMP," U. Mahajan, S. Lee and R.K. Singh, Spring MRS, San Francisco, April 2000.

"Particulate Effect in Cu CMP," S. Lee, U. Mahajan, A. Nagory and R. Sing, Spring MRS, San Francisco, April 2000.

"*In-Situ* Friction-Force Measurements in CMP," V. Mahajan, S. Lee and R. Singh, Spring MRS, San Francisco, April 2000.

"Fundamental Studies on Iodate Slurry Chemistries During CMP pf Cu," S. Lee, U. Mahajan, V. Cracium and R.K. Singh, Spring MRS, San Francisco, April 2000.

"Epitaxial ZnO Films Grown by UV-Assisted PLD," V. Cracium, N. Bassim, R.K. Sing, J. Perriere and D. Crasium, Spring MRS, San Francisco, April 2000.

"Role of O Content and Crystallinity in Magnetoresistance Behavior of CLMO Then Films," S. Pietambaram, D. Kumar, R.K. Singh and C.B. Lees, Spring MRS, San Francisco, April 2000.

"Low Temperature Growth of $BaSrTiO_3$ Thin Films by UV-Assisted PLD," V. Crasium, J. Howard, N. Bassim, R.K. Singh and J. Pierre, Spring MRS, San Francisco, April 2000.

"UV-Assisted PLD of Thin Films," V. Crasium and R.K. Singh, Spring MRS, San Francisco, April 2000.

"Magnetic and Magnetoresistance Properties of PLD $LaCaMnO_3$ on Si," D. Kumar, J. Narayan, R.K. Singh, C.B. Lee and J. Sankar, Spring MRS, San Francisco, April 2000.

"Modelling of Interfacial Scattering Effects During Light Emission from Phosphor Then Films for Field Emission Displays," R.K. Singh, K. Cho, Z. Chen and D. Kumar, Spring MRS, San Francisco, April 2000.

"Nanunctionalized Sulfide-Band Powders for Flat Panel Display Applications," M. Ollinger, V. Crasium and R.K. Singh, Spring MRS, San Francisco, April 2000.

"The Effect of Microstructure on the Brightness of PLD Y_2O_3:Eu Then Film Phosphors," K. Cho, D. Kumar, R. Singh, G. Russel and B.K. Wagner, Spring MRS, San Francisco, April 2000.

"Stoichiometry Effects of Li on the Electrochemical Properties of $LiMn_2O_4$ Films Grown by Laser Ablation," D. Singh, H. Hofmann, V. Carcium, R.K. Singh and J. Pierre, Spring MRS, San Francisco, April 2000.

"Room Temperature Growth of ITO Films by UV-Assisted PLD," V. Cracium, R.K. Singh and D. Cracium, Spring MRS, San Francisco, April 2000.

"Effects of Co-Dopants on the EL Properties of ZnS:Tb," P. Holloway, J. Kim, M. Davidson and B. Speck, Spring MRS, San Francisco, April 2000.

"Electron Tunnelling Measurements on the CMR Perovskites," H. Hudspeth, P. Xiong, S. von Molnar and F. Sharifi, 2000 March Meeting of APS, Minneapolis, March 2000.

"Discovery of a New Undoped nFi System – U_2Co_2Sn," G. Stewart, J. Kim, S. Getty and F. Sharifi, 2000 March Meeting of APS, Minneapolis, March 2000.

"Transport Measurements of Electron and Hole-doped CaB_6," S. Getty, F. Sharifi, D. Young and Z. Fisk, 2000 March Meeting of APS, Minneapolis, March 2000.

"Dependence of the CTP-GMR on Spin-Independent Scattering in Fe/Co Superlattices," T. Choy, S. Hershfield and J. Chen, 2000 March Meeting of APS, Minneapolis, March 2000.

"A Database of Fermi Surfaces in Virtual Reality Modelling Language," T. Choy, J. Naset, S. Hershfield, C. Stanton and J. Che, 2000 March Meeting of APS, Minneapolis, March 2000.

"Magnetic Bound States of $SrCu_2(BO_3)_2$," V. Kobor and S. Hershfield, 2000 March Meeting of APS, Minneapolis, March 2000.

"Zero-bias Anomalies in Magnetic Hexabodies," S. Hershfield and V. Kobor, 2000 March Meeting of APS, Minneapolis, March 2000.

"Systematic in the Behavior of Co_{60} Monolayers Deposited Linearly onto Then Films and Doped by Electron Transfer," Q. Hudspeth, S. Arason and A.F. Hebard, 2000 March Meeting of APS, Minneapolis, March 2000.

"Experimental Determination of Screening Length in Thin Magnetic Films," K. McCarthy, N. Theodoropoloa and D. Temple, 2000 March Meeting of APS, Minneapolis, March 2000.

"The Influence of Percolation on Quantum Coherence in Coalescing Ag Films," S. Arason and A.F. Hebard, 2000 March Meeting of APS, Minneapolis, March 2000.

'Spin-Peierls Transition in NaV_2O_5 in High Magnetic Fields," A.F. Hebard, S. Bompudre, V. Kotov, D. Hall, V. Bass and T. Palstra, 2000 March Meeting of APS, Minneapolis, March 2000.

"Direct Measurement of the g-Factor in Crystalline Bi at High B/T," S. Bompadre, C. Biagini, D. Maslov and A.F. Hebard, 2000 March Meeting of APS, Minneapolis, March 2000.

"Microcalorimetry: Wide Temperature Range, High Field and Small Sample Measurements," F. Hellman, 2000 March Meeting of APS, Minneapolis, March 2000. (Invited)

"Critical Phenomena of $LaSrMnO_3$," D. Kim, F. Hellman and J. Coey, 2000 March Meeting of APS, Minneapolis, March 2000.

"Ion Beam Assisted MBE Growth of Magnetic $CoPt_3$," D. Vasumalli, B. Marauville and F. Hellman, 2000 March Meeting of APS, Minneapolis, March 2000.

"Perpendicular Magnetic Anisotropy of $CoPt_3$ on Vicinal Substrates," B. Maranville, A. Shapiro, F. Hellman and E.T. Yu, 2000 March Meeting of APS, Minneapolis, March 2000.

"Magnetic Filed Driver Change of the Density of States of a-Gd_xSi_{1-x} at the Metal-Insulation Transition," W. Teitzer, F. Hellman and R.C. Dynes, 2000 March Meeting of APS, Minneapolis, March 2000.

"Magnetic and Thermodynamic Features of Antiferromagnetic Nanoparticles in a Metallic Matrix," R. Sappey, E. Price, F. Hellman and A. Berkowitz, 2000 March Meeting of APS, Minneapolis, March 2000.

"Local Movements and Localized Conduction Electrons in a-Gd_xSi_{1-x}," B. Zink, D. Queen, R. Sappey, E. Janod and F. Hellman, 2000 March Meeting of APS, Minneapolis, March 2000.

"Infrared Spectroscopy of $NdCeCuO_x$," E. Singley, A. Katz, S. Woods, R.C. Dynes and K. Yamada, 2000 March Meeting of APS, Minneapolis, March 2000.

"Epitaxial Growth of CrO_2 Films by CVD from Cr_8O_{21} Precursors," P. Ivanov, S. Watts, D. Lind and S. von Molnar, 2000 March Meeting of APS, Minneapolis, March 2000.

"Electrical Noise Tide of the Percolative Conduction in $LaCaMnO_3$," A. Anane, B. Baquet and S. von Molnar, 2000 March Meeting of APS, Minneapolis, March 2000.

"Temperature Evolution of Magnetic Scattering in Half-Metallic Chromium Dioxide," S. Watts, S. Wirth, S. von Molnar, A. Barry and J. Coey, 2000 March Meeting of APS, Minneapolis, March 2000.

"Electron Tunneling Measurements on the CMR Perovskites," F. Sharifi, P. Xiong and S. von Molnar, Fall MRS, Boston, December 1999. (Invited)

"Quantitative Study of Nanoscale Contact and Pre-Contact Mechanics Using Force Modulation," S. Syed Asif, K. Wahl and R.J. Colton, Fall MRS, Boston, December 1999.

"Relationship Between Microstructure and Luminescent Properties of Epitaxially Grown Y_2O_3:Eu Thin Films on $LaAlO_3$," H. Guo, S. Pennycook, D. Kumar and R.K. Singh, Fall MRS, Boston, December 1999.

"Low Temperature Growth of $BaSrTiO_3$ by UV-Assisted PLD," V. Cracium, J. Howard, R.K. Singh and J. Perriere, Fall MRS, Boston, December 1999.

"Characteristics of ZnO Films Grown by UV-Assisted PLD," V. Cracium, J. Howard and R.K. Singh, Fall MRS, Boston, December 1999.

"Dielectric Passivation/Oxides on Compound Semiconductors," F. Ren, M. Hong, S.J. Pearton, C.R. Abernathy, G. Dang and J.R. Lothian, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"Advanced Selective Dry Etching of GaAs/AlGaAs in High Density Inductively Coupled Plasmas," J.W. Lee, M. Devre, B. Reelfs, D. Johnson, J. Sasserath, F. Clayton and S.J. Pearton, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"Comparison of Plasma Chemistries for Dry Etching of Ta_2O_5," K.P. Lee, K.B. Jung, R.K. Singh, S.J. Pearton, C.C. Hobbs and P. Tobin, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"Effects of UV Illumination on Dry Etch Rates of NiFe-Based Magnetic Multilayers," H. Cho, K.P. Lee, K.B. Jung, Y.B. Hahn, S.J. Pearton and R.J. Shul, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"High Breakdown Voltage (Au/Pt/GaN Schottky Diodes," J.I. Chyi, J.M. Lee, C.C. Chuo, G.C. Chi, G. Dang, A.P. Zhang, X.A. Cao, MM. Mshewa, F. Ren, S.J. Pearton, S.N.G. Chu and R.G. Wilson, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"ICP-Induced Etch Damage of GaN p-n Junctions," R.J. Shul, A.G. Baca, L. Zhang, C.G. Willison, S.J. Pearton and F. Ren, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"Schottky Diode Measurements of Dry Etch Damage in n- and p-type GaN," X.A. Cao, Z.P. Zhang, G. Dang, F. Ren, S.J. Pearton, R.J. Shul and L. Zhang, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"Effect of N_2 Discharge Treatment on AlGaN/GaN HEMT Ohmic Contact Using ICP," A.P. Zhang, G. Dang, X.A. Cao, F. Ren, S.J. Pearton, J.M. Van Hove, P.P. Chow, R. Hickman and J.J. Klaassen, 46th Int. Symp. AVS, Seattle, Oct. 1999.

"High Density Plasma Etching of Ta_2O_5-Selectivity to Si and Effect of UV Light Enhancement," K.P. Lee, h. Cho, R.K. Singh, S.J. Pearton, C. Hobbs and P. Tobin, MRS Fall Meeting, Boston, Nov. 1999.

"High Density Plasma Etching of $(BaSr)TiO_3$ and $LaNiO_3$," K.P. Lee, K.B. Jung, A. Srivastava, D. Kumar, R.K. Singh and S.J. Pearton, MRS Fall Meeting, Boston, Nov. 1999.

"Ion Enhanced Dry Etching of Magnetic Multilayers: Post-Etch Cleaning and Effects of UV Illumination," H. Cho, K. Lee, K.B. Jung, S.J. Pearton, F. Sharifi and J. Marburger, MRS Fall Meeting, Boston, Nov. 1999.

"A Unified Approach to Modelling of Etched Profiles in an ICP Etching System," Y. Im, Y.B. Hahn and S.J. Pearton, 5th Intl. Workshop on Advanced Plasma Tools & Process Engineering, Santa Clara, CA, Feb. 2000.

"Corrosion-Free Dry Etch Patterning of MRAM Stacks – Effects of UV Enhancement," H. Cho, K.-P. Lee, K.B. Jung, S.J. Pearton, J. Marburger, F. Sharifi and J.R. Childress, 44th Ann. Conf. Magnetism and Magnetic Materials, San Jose, CA, Nov. 1999.

"Dry etching of MRAM Structures," S.J. Pearton, H. Cho, K.B. Jung, J.R. Childress, F. Sharifi and J. Marburger," 2000 Spring MRS Meeting, San Francisco, CA, April 2000.

"Low D_{IT} Dielectric/GaN MOS Systems," M. Hong, H. Ng, J. Kwo, A. Korkan, J. Baillargeon, S. Chu., J. Mannaerts, A.Y. Cho, F. Ren, C. Abernathy, S.J. Pearton and J.I. Chyi, 197th Meeting of the ECS, Toronto, May 2000.

"Magnetism Of Nanometer-Scale Iron Particle Arrays," S. Wirth MPI for Chemical Physics of Solids, Dresden, January 19, 1999.

"Magnetisierungsverhalten Regelmäßiger Anordnungen Von Ferromagnetischen Nanometerteilchen," S. Wirth, IMW Dresden (IFW), January 20, 1999.

"Magnetism Of Nanometer-Scale Iron Particle Arrays," S. Wirth, Laboratoire Louis Neel, CNRS Grenoble, January 25, 1999.

"Magnetism Of Nanometer-Scale Iron Particle Arrays," S. Wirth, CMRR (UCSD), San Diego, February 9, 1999.

"Magnetism of Nanometer-Scale Iron Particle Arrays," S. Wirth and S. von Molnár APS March Meeting 2000, Minneapolis, USA. (Invited)

"Experimental Determination of the Screening Length in Thin Magnetic Films," K. T. McCarthy, N. A. Theodoropoulou, A. F. Hebard (Department of Physics, Gainesville Fl 32611-8440), Dorota Temple (MCNC, Electronics Technologies Division, Research Triangle Park, NC 27709-2889), APS March meeting (3/20-3/24).

"Growth-induced perpendicular anisotropy and clustering in Ni_XPt_{1-X} alloys." A. L. Shapiro, D. Vasumathi, B. M. Maranville, and F. Hellman, Conference presentation March APS (2000).

"Growth-induced anisotropy on vicinal substrates," B. M. Maranville, A. L. Shapiro, D. Vasumathi, and F. Hellman, Conference presentation March APS (2000).

"Ion-beam assisted growth of perpendicular anisotropy materials, "D. Vasumathi, B. M. Maranville, and F. Hellman, Conference presentation March APS (2000.

"Sliding Transitions and Dissipation in Nanoscale Contacts," K.J. Wahl and S.A. Syed Asif, American Vacuum Society National Symposium, Seattle, WA, 25-29 October, 1999.

"Measuring and imaging contact stiffness quantitatively at the nanoscale using force modulation," S.A. Syed Asif, K.J. Wahl and R.J. Colton, American Vacuum Society National Symposium, Seattle, WA, 25-29 October, 1999.

"Quantitative Study of Nanoscale Contact and Pre-Contact Mechanics using Force Modulation," S.A. Syed Asif, K.J. Wahl and R.J. Colton, Materials Research Society Fall Meeting, Boston, MA, Dec 1999.

"Quantitative Nanoscale Surface Mechanical Properties of Polymers and Thin Films," K.J. Wahl, S.A.S. Asif, and R.J. Colton, SPM in Biomaterials Conference, Bristol, UK, June 23 2000. (Invited)

"Mechanics, Sliding Transitions and Dissipation in Nanoscale Contacts," K.J. Wahl, presented at Gordon Research Conference on Tribology, Holderness, NH, July 2000. (Invited)

"Nanoscale Surface Mechanical Properties of Polymer Thin Films and Organic Monolayers," K.J. Wahl, S.A.S. Asif, and R.J. Colton, 219th National Meeting of the American Chemical Society, San Francisco, CA, 26-31 March 2000. (Invited)

"Nanoscale Surface Mechanical Properties of Polymer Thin Films and Organic Monolayers," K.J. Wahl, S.A.S. Asif, and R.J. Colton, 220th National Meeting of the American Chemical Society, Washington DC, 20-24 August 2000 (Invited)

"Quantitative Imaging of Dynamic Mechanical Properties by Hybrid Nanoindentation," S.A. Syed Asif, K.J. Wahl, and R.J. Colton, American Vacuum Society National Symposium, Boston, MA, 2-6 October 2000.

"Force-modulated nanoindentation of fluorinated polymer thin films grown by PECVD," S.A. Syed Asif, E.J. Winder, K.K. Gleason, and K.J. Wahl, American Vacuum Society National Symposium, Boston, MA, 2-6 October 2000.

"Quantitative Study of Nanoscale Mechanical Properties of Nanostructures," S.A. Syed Asif, K.J. Wahl, and R.J. Colton Symposium T: Fundamentals of Nanoindentation and Nanotribology II, Fall MRS Conference, Boston, MA, 27 November-1 December 2000.

"Sliding Transitions, Mechanics and Dissipation in Nanoscale Contacts," K.J. Wahl, S.A.S. Asif, and R.J. Colton, Symposium T, Dynamics in Small Confining Systems VI, Fall MRS Conference, Boston, MA, 27 November-1 December 2000. (Invited)

"Flux Pinning in a Superconductor by an Array of Submicron Magnetic Dots," Ivan K. Schuller, Euroconference on Vortex Matter, Crete, Greece, September 18-24, 1999. (Invited)

"Dependence of the CPP-GMR on Spin-independent Scattering in Fe/Cr Superlattices," Tat-Sang Choy, Selman Hershfield, and Jian Chen, March Meeting of the American Physical Society, Minneapolis Minnesota, March 20-24, 2000.

"Database of Fermi Surfaces in Virtual Reality Modeling Language," Tat-Sang Choy, Jeffery Naset, Selman Hershfield, Christopher Stanton, and Jian Chen, March Meeting of the American Physical Society, Minneapolis Minnesota, March 20-24, 2000.

"Zero-bias Anomalies in Magnetic Hexaborides," Selman Hershfield and Valeri Kotov, March Meeting of the American Physical Society, Minneapolis Minnesota, March 20-24, 2000.

"Ion Beam Sputter Deposition of GMR Materials," G. E. McGuire, D. Temple, M. Ray, J. Lannon, and A.F. Hebard, invited talk at the Annual Symposium of the Mexican Vacuum Society, Mexico, 1999.

"Giant Magnetoresistive Films Grown by Ion Beam Sputter Deposition," G.E McGuire, D. Temple, J. M. Lannon, C.C. Pace, and M.A. Ray, invited talk to be presented at the International Workshop on Smart and Functional Film Deposition for VLSI Applications, November 2000, Nagoya, Japan.

Personnel Supported

Year 1

Post-doctoral Associates and Visiting Researchers

Vinay Ambegaokar, Visiting Professor with Dr. Hershfield
Jose Martin, Visiting Scholar at UCSD
Joseph Nagues, Visiting Scholar at UCSD

Graduate Students:

Kee Bum Jung with Dr. Pearton
Cathy Vartuli with Dr. Pearton
Juan Caballero with Dr. Childress
Dan Park with Dr. Childress
Yifeng Yang with Dr. Childress
Heather Hudspeth with Dr. Sharifi
Timothy Schultz with Dr. Sharifi
Kingshuk Majumdar with Dr. Hershfield
Tat Sang Choy with Dr. Hershfield
Sean Jones with Dr. Holloway
Jonathan Hack with Dr. Hummel
Ed Price at UCSD
Alex Shapiro at UCSD

Undergraduate Students

Greg Beck with Dr. Hershfield
Regan Stradtmann with Dr. Pearton

Year 2

Post-doctoral Associates and Visiting Researchers

Jung-Sik Bang, Visiting Scientist with Dr. Holloway
Xiao-ming Zhan, Visiting Scientist with Dr. Holloway
Jian Chen, Post-doctoral Associate, with Dr. Hershfield
Michael Coey, Visiting Professor at UCSD
Aviad Frydman, Post Doctoral Fellow at UCSD
M.-C. Cyrille, Post Doctoral Fellow at UCSD
S. Kim, Post Doctoral Fellow at UCSD
Jean Heremans, Post-doctoral fellow with Dr. von Molnar
S. Wirth, Post-doctoral fellow with Dr. von Molnar

Graduate Students:

Kee Bum Jung with Dr. Pearton
Jin Hong with Dr. Pearton
Xianan Cao with Dr. Pearton
Juan Cabbalero with Dr. Childress

Dan Park with Dr. Childress
Anthony Cabbibo with Dr. Childress
Heather Hudspeth with Dr. Sharifi
Timothy Schultz with Dr. Sharifi
Kingshuk Majumdar with Dr. Hershfield
Tat Sang Choy with Dr. Hershfield
Sean Jones with Dr. Holloway
Jonathan Hack with Dr. Hummel - Graduated with M.S., May 1997.
Shi-Dong Yu with Dr. Hummel
Ed Price at UCSD
A. Hoffman at UCSD
J. Choi at UCSD
B. Maranville at UCSD

Undergraduate Students

David Hays with Dr. Pearton

Year 3

Postdoctoral Associates and Visiting Researchers

J.J. Heremans	Post Doctoral Fellow at FSU (now at EMCORE)
S. Wirth	Post Doctoral Fellow at FSU
J. Caballero	Post Doctoral Fellow at UF (now at UMich)
J. Chen	Post Doctoral Fellow at UF (now at Seagate)
H. Cho	Post Doctoral Fellow at UF
A. Frydman	Post Doctoral Fellow at UCSD
Michael Coey	Visiting Professor at UF
Y.B. Hahn	Visiting Professor at UF
Aviad Frydman	Post Doctoral Fellow at UF
M.C. Cyrille	Post Doctoral Fellow at UF
S. Kim	Post Doctoral Fellow at UF
Jian Chen	Post Doctoral Fellow at UF

Graduate Students

K.B. Jung with Dr. Pearton
J. Hong with Dr. Pearton (now at Samsung)
X. Cao with Dr. Pearton
K. Lee with Dr. Pearton
Y. Park with Dr. Holloway
T. Feng with Dr. Childress
Y. Wu with Dr. Childress
H. Hudspeth with Dr. Sharifi
K. Majumdar with Dr. Hershfield
J. Lewis with Dr. Holloway

Ed Price with Dr. Hershfield
Alex Shapiro with Dr. Hershfield
A. Hoffman with Dr. Hershfield
B. B. Maranville with Dr. Hershfield
Ted O'Brien with Dr. Holloway
Jay Lewis with Dr. Holloway
Joe Thomes with Dr. Holloway
Heather D. Hudspeth with Dr. Sharifi
Kingshuk Majumdar with Dr. Hershfield
Tat-Sang Choy with Dr. Hershfield

Undergraduate Students

D. Hays with Dr. Pearton
Stephanie Getty with Dr. Sharifi
Jonathan Marburger with Dr. Sharifi

Year 4

Postdoctoral Associates and Visiting Researchers

S. Wirth	Post Doctoral Fellow at FSU
H. Cho	Post Doctoral Fellow at UF
Y.B. Hahn	Visiting Professor at UF
M. Coey	Visiting Professor at FSU
Jian Chen	Post Doctoral Fellow at UF
Y. Park	Post Doctoral Fellow at UF (now at NRL)
J.I. Martin	Visiting Processor at UCSD
M. Velez	Visiting Processor at UCSD
J. Nogues	Visiting Processor at UCSD
J.L. Vincent	Visiting Processor at UCSD
J.-M. George	Visiting Processor at UCSD
E.M. Gonzalez	Visiting Processor at UCSD
Y. Jaccard	Post Doctoral Fellow at UCSD
M.C. Cyrille	Post Doctoral Fellow at UCSD
Aviad Frydman	Post Doctoral Fellow at UCSD
W. Teizer	Post Doctoral Fellow at UCSD
D. Kumar	Research Scientist at UF
Bernard Revaz	Visiting Scholar at UCSD

Graduate Students

K.B. Jung with Dr. Pearton (now at IBM)
X. Cao with Dr. Pearton
K.P. Lee with Dr. Pearton
J. Mileham with Dr. Pearton (now faculty at U. Puerto Rico)
H. Hudspeth with Dr. Sharifi

J. Marburger with Dr. Sharifi
T.S. Choy with Dr. Hershfield
J. Lewis with Dr. Holloway
J. Thomes with Dr. Holloway
S. Pietambaram with Dr. Sharifi
G.T. Dang with Dr. Ren
T. O'Brien with Dr. Holloway
E. Price with Dr. Hershfield
A. Shapiro with Dr. Hershfield
A. Hoffmann with Dr. Schuller
S.V. Pietambaram with Dr. Singh
B. Maranville with Dr. Hellman
A. Shapiro with Dr. Hellman
Tat-Sang Choy with Dr. Hershfield

Undergraduate Students

S. Getty with Dr. Sharifi
T. Plew with Dr. Pearton
T. Kirk with Dr. Dynes

Year 5

Postdoctoral Associates and Visiting Researchers

S. Wirth	Post Doctoral Fellow at FSU (now at the Max Planck Institute, Dresden, Germany)
H. Cho	Post Doctoral Fellow at UF
Y.B. Hahn	Visiting Professor at UF
M. Coey	Visiting Professor at FSU
Jian Chen	Post Doctoral Fellow at UF
Y. Park	Post Doctoral Fellow at UF (now at NRL)
J.I. Martin	Visiting Professor at UCSD
M. Velez	Visiting Professor at UCSD
J. Nogues	Visiting Professor at UCSD
J.L. Vincent	Visiting Professor at UCSD
J.-M. George	Visiting Professor at UCSD
E.M. Gonzalez	Visiting Professor at UCSD
P. Prieto	Visiting Professor at UCSD
Y. Jaccard	Post Doctoral Fellow at UCSD
M.C. Cyrille	Post Doctoral Fellow at UCSD
Aviad Frydman	Post Doctoral Fellow at UCSD
W. Teizer	Post Doctoral Fellow at UCSD
A.S. Katz	Post Doctoral Fellow at UCSD
Axel Hoffmann	Post Doctoral Fellow at UCSD
D. Kumar	Research Scientist at UF
Bernard Revaz	Visiting Scholar at UCSD

Graduate Students

D. Kent with Dr. Pearton
X. Cao with Dr. Pearton (now at Alpha Photonics)
K.P. Lee with Dr. Pearton
D.C. Hays with Dr. Pearton (now at Sony Corporation)
H. Hudspeth with Dr. Sharifi (now at GE)
J. Marburger with Dr. Sharifi
T.S. Choy with Dr. Hershfield
S.A. Getty with Dr. Sharifi
S. Khan with Dr. Sharifi
J. Howard with Dr. Singh
G.T. Dang with Dr. Ren
E. Price with Dr. Hershfield
B. Shapiro with Dr. Hershfield
Zhihong Chen with Dr. Hershfield
Tat-Sang Choy with Dr. Hershfield
B. Hoffmann with Dr. Schuller
S.V. Pietambaram with Dr. Singh
B. Maranville with Dr. Hellman
B. Shapiro with Dr. Hellman
N. Theodoropoulou with Dr. Hebard
K.T. McCarthy with Dr. Hebard
Casey Pace with Dr. Temple (a student at the Department of Physics of the University of North Carolina in Chapel Hill)

Undergraduate Students

T. Plew with Dr. Pearton
T. Kirk with Dr. Dynes

Degrees Awarded

Year 3

Juan Caballero	Ph.D. University of Florida 1997 "Growth and Characterization of Thin Films of NiNnSb and Its Application to Magnetoresistive Multilayer Structures"
Tao Feng	MS University of Florida 1998 "Magnetic and Magneto-Transport Properties of Amorphous CoFeB Spin Valve Multilayer Films"
Jin Hong	Ph.D. University of Florida 1998 "High Density Dry Etching – Mechanisms"
S.L. Jones	Ph.D. University of Florida 1998 "PLD of Y_2O_3:Eu Cl Phosphors for Flat Panel Displays"
Jewon Lee	Ph.D. University of Florida 1997 "Comparison of High Density ECR and ICP Plasma Sources for Etching of Electronic Materials – New Etch Regimes"
Yun Park	MS University of Florida 1997 "Fabrication and Characterization of Nanometer-sized Magnetic Particles"
T. Schultz	MS University of Florida 1997 "Novel Techniques for Nanowire Fabrication"
Juan-Juan Wang	MS University of Florida 1998 "High Density Plasma Etching of $LaCuMnO_x$"

Year 4

Yun Daniel Park	Ph.D. University of Florida 1998 "Fabrication and Characterization of Anisotropic MR and GMR Structures at Reduced Dimensions"
K.B. Jung	Ph.D. University of Florida 1999 "High Density Plasma Etching of Magnetic Materials"
J. Mileham	Ph.D. University of Florida 1999 "Characterization of GaSb Grown Under Microgravity Conditions by LEMZ"

D.C. Hays	MS University of Florida 1999 "Selective Etching of Compound Semiconductors"
D.S. Bitting	MS University of Florida 1998 "Aspect Ratio Dependent Etching of SiO_2 in HDP Systems for Submicron Applications"
S.T. Molloy	MS University of Florida 1998 "The Oxidation of TiN in O_2 Plasma Photoresist Stripping Processes"
T.M. Ake	MS University of Florida 1998 "Ohmic Contacts"
K. Majumdar	Ph.D. University of Florida 1999 "Study of Transport Properties in Magnetic Nanostructures"
A. Hoffmann	Ph.D. University of California – San Diego "Fundamental Studies of Magnetism"
A.S. Katz	Ph.D. University of California – San Diego "Fabrication, Characterization and Analysis of Nanofabricated Ion Damage High Temperature Josephson Junctions"

Year 5

Heather Hudspeth	Ph.D. University of Florida 2000 "Electron Tunnelling Measurements on Ferromagnetically-Doped Lanthanum Manganite Films"
K.B. Jung	Ph.D. University of Florida 1999 "High Density Plasma Etching of Magnetic Materials"
A. Srivistava	M.S. University of Florida 1999 "Growth and Characterization of $BaSeTiO_3$ Films with Enhanced Electrical Properties using PLD"
D.C. Hays	MS University of Florida 1999 "Selective Etching of Compound Semiconductors"
X.A. Cao	Ph.D. University of Florida 2000 "Advanced Processing for Novel Devices"
K.P. Lee	MS University of Florida 1999

	"Dry Etching of Novel Dielectric Films"
K. Majumdar	Ph.D. University of Florida 1999 "Study of Transport Properties in Magnetic Nanostructures"
A. Hoffmann	Ph.D. University of California – San Diego 1999 "Fundamental Studies of Magnetism"
A.S. Katz	Ph.D. University of California – San Diego 1999 "Fabrication, Characterization and Analysis of Nanofabricated Ion Damage High Temperature Josephson Junctions"

Book Chapters

"Dry Etching of Magnetic Materials," K.B. Jung, H. Cho and S.J. Pearton, in Advanced Plasma Processes, ed. R.J. Shul (Springer-Verlag, Berlin, 1999).

Patents

"Method of Manufacturing Photoluminescing Semiconductor Materials Using Lasers", Patent No. 5,597,621; Date Granted: January 28, 1997.

"Method for Altering the Magnetic Properties of Materials by Spark Processing", Filed November 27, 1996.

Honors/Awards

Dr. Sharifi obtained the Teaching Incentive Program award from the University of Florida.

Dr. Holloway obtained the Professional Excellence Program award from the University of Florida.

Dr. Holloway obtained the Research Foundation Professorship award from the University of Florida.

Dr. Pearton was awarded Fellowship in ECS (1996) and IEEE (2000).

Prof. Dynes became Chancellor of UCSB.